Chapter 15
Designing a Relational Database Schema for a Kosovo Hospital Management System

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ABSTRACT

A relational database schema was designed for the Kosovo Hospital Management System. The objective was to create a platform to store patient information, appointments, billing, and feedback, with the main goal of improving patient care. Eleven unique tables were created, with primary and foreign keys defining the relationships between them. Through the tables it is possible the management of patient and doctor schedules, medical records, allergies, blood donations, medical equipment, and hospital department administration, among others. The management system benefits all healthcare institutions such as hospitals, clinics, and blood banks, as well as medical staff such as doctors and nurses. Patients can also benefit from this by providing better healthcare services, faster appointment scheduling, and more.

INTRODUCTION

We want to make a management system for healthcare institutions, especially for hospitals. Our main objective is to improve the quality of patient care. Our project offers a platform that stores patient information, appointments, billing, and feedback. Healthcare workers may manage patient information such as medical history, allergies, prescriptions, and other essential information with this system in a very convenient way (K. Hedau et. al.,2018). The project will also allow patients and healthcare professionals to schedule and manage appointments. However, we offer different ways to store information for other stuff such as medical equipment (C. C. Batbagon et. al.,2018). We created 11 unique tables that are of course, related to each other in different ways (please check DBMS diagram for more information about the relationships between tables). Here are some of the functions that we are trying to provide based on our 11 tables:

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- Managing patient and doctor schedules when creating a scheduling system for medical appointments.
- Create a patient database system that stores patient information, medical records, and test results.
- Create a system for managing doctor schedules and wages by tracking physicians' schedules and their wages (K. Cincar et. al.,2019).
- Create a blood donation management system that keeps track of donors and their donations.
- Create a medical equipment inventory management system that tracks equipment usage and upkeep (Guha, A. et. al., 2023).
- Create a patient feedback system that captures patient input and improves healthcare services.
- Handling patient invoices and payment data in a billing and payment system for medical establishments.
- Create a system for monitoring allergies in patients by tracking allergies and allergic responses (T. O. Paulussen et. al.,2006).
- Create a hospital department administration system that organizes departments and their staff personnel (S. Rupp et. al.,2019).

We believe that healthcare institutions such as hospitals, clinics, and blood banks would benefit from this initiative, as will medical personnel such as doctors and nurses who will be able to use the technologies to manage their job more efficiently (Jain, A. et. al., 2023). These technologies can also assist patients by providing better healthcare services, faster appointment scheduling etc.

LIST OF TABLES

This is an overview of our tables. Primary keys are noted with the yellow color and foreign keys are noted with green. Figure 1 shows an overview of tables created for the project. Figure 2 shows a DBMS diagram showing the different relationships between tables.

Figure 1. An overview of tables created for the project

G_4A_PATIENTS_TABLE	patient_id	first_name	last_name	date_of_birth	gender	phone	email	address	medical_condition
Data type	varchar(15)	varchar(20)	varchar(20)	DATE	varchar(1)	varchar(15)	varchar(30)	varchar(50)	varchar(100)

G_4A_DOCTORS_TABLE	doctor_id	first_name	last_name	specialization	phone	email	address	salary	schedule
Data Type	varchar(15)	varchar(20)	varchar(20)	varchar(20)	varchar(15)	varchar(30)	varchar(50)	decimal(5,2)	varchar(15)

G_4A_APPOINTMENTS_TABL	appointment_id	patient_id	doctor_id	appointment_date	appointment_time	purpose
Data Type	int	varchar(20)	varchar(15)	DATE	TIME	varchar(20)

G_4A_DEPARTMENTS_TABLE	department_id	department_name
Data Type	int	varchar(20)

G_4A_MEDICATIONS_TABLE	medication_id	medication_name	dosage	instructions	patient_id
Data Type	int	varchar(40)	varchar(20)	varchar(100)	varchar(15)

G_4A_BILLING_INFO	bill_id	patient_id	date	total_amount	payment_method	status
Data Type	int	varchar(15)	DATE	decimal(5,2)	varchar(20)	varchar(20)

G_4A_PATIENT_FEEDBACK	feedback_id	patient_id	date	feedback_type	feedback_message
Data Type	varchar(15)	varchar(15)	DATE	varchar(10)	varchar(100)

G_4A_MEDICAL_EQUIPMENT	equipment_id	equipment_name	manufacturer	model	serial_no	purchase_date
Data_Type	varchar(20)	varchar(30)	varchar(30)	varchar(30)	int	DATE

G_4A_PATIENT_ALLERGIES	patient_id	allergy_id	allergy_name	allergy_type	allergy_severity
Data Type	varchar(15)	varchar(15)	varchar(30)	varchar(20)	varchar(30)

G_4A_BED_ASSIGNMENT	patient_id	bed_no	admission_date	discharge_date
Data Type	varchar(15)	int	DATE	DATE

G_4A_BLOOD_DONORS	donor_id	donor_name	donor_age	blood_type	donor_email	last_donation_date
Data Type	varchar(15)	varchar(20)	int	varchar(5)	varchar(30)	DATE

PRIMARY KEY

FOREIGN KEY